# Science Flight Report
# Operation Ice Bridge August 2010

## UAF Alaska Flight No 6
## Mission Plan: Columbia Glacier and eastern Chugach Range

### Flight Report Summary

| | |
|---|---|
| **Aircraft** | **DHC-3 Otter** |
| **Flight Number** | UAF-6 |
| **Flight Request** | 10M014 |
| **Flight Hours** | 5.7 |
| **Take off time** | 9:00:00.00 Z from Ultima Thule Outfitters Lodge |
| **Landing time** | 14:50:00.00 Z at Ultima Thule Outfitters Lodge |
| **Date** | Tuesday, Aug 24 2010, Day of Year 236 |
| **Purpose of Flight** | LiDAR surveys of the Columba Glacier and other Chugach Mtns. Glaciers. |
| **Aircraft Status** | Airworthy. |
| **Sensor Status** | operational. |
| **Significant Issues** | None. |
| **Accomplishments** | • LiDAR centerline profiles of the Columbia, Woodworth, Deserted, Bench, Wortmanns, Scott, and Allen Glaciers. |
| **Planned Events** | • The next surveys will shift to southeast Alaska, mostly in the Yakutat Icefield and/or the Juneau Icefield. |

### Science Data Report Summary

This mission performed LiDAR surveys of glaciers within the Chugach and eastern Chugach Mtns. of southern Alaska, including the Columbia Glacier. LiDAR data were collected at a height of 500-650 meters above the glacier surface, and mapped a 0.5 km wide swath along the centerline of the glaciers. This swath map consists of measurements from individual laser shot points on a roughly 1 meter by 1 meter grid. The individual point measurements of the glacier surface latitude, longitude and elevation have an accuracy of approximately ±10 cm.
Geographic keywords: (Columbia Glacier, Chugach Range, Alaska)
Repeat Mission: yes (2009, 2005, 2004, 2000, 1995)

| Instrument | Instrument Operational | | Data Volume | Instrument Issues |
|---|---|---|---|---|
| | Target area | Entire Flight | | |
| **UAF LiDAR** | Yes | No | 1.45 GB in raw binary format | None |
| **GPS** | Yes | Yes | 104 MB in raw binary format | None |
| **IMU** | Yes | Yes | 188 MB in raw binary format | None |

**Mission Log (Chris Larsen)**

Today's mission is a LiDAR survey of glaciers within the Chugach Mountains of south central Alaska. Columbia Glacier is a rapidly retreating tidewater glacier.

The weather was clear but windy, with mild to moderate turbulence. The winds were out of the north, and flying down the south flowing glaciers towards the coast was particularly rough.

**Individual instruments on board the aircraft:**

**LiDAR:** The UAF LiDAR systems worked well.

**GPS:** System worked normally. No problems.

**IMU:** System worked well. No issues.

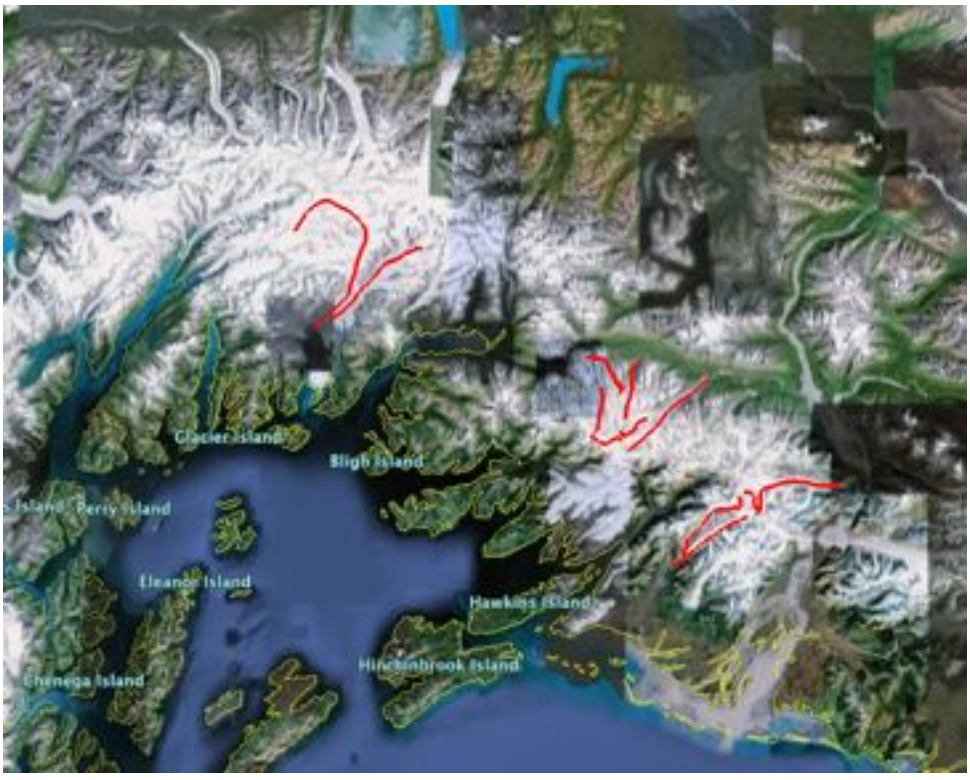


Figure 1: LiDAR ground tracks over the Columbia, Woodworth, Deserted, Bench, Wortmanns, Scott, and Allen Glaciers.


**Figure 2: Setting up a temporary GPS base station at 7000 ft on the west branch of the Columbia Glacier, for local kinematic control of the aircraft position.**

**Figure 3: The Columbia Glacier.**

Figure 4: Allen Glacier moraines.